<110> Mirkin, Chad A.
      Letsinger, Robert L.
      Mucic, Robert C.
      Storhoff, James J.
      Elghanian, Robert
      Taton, Thomas A.

<120> NANOPARTICLES HAVING OLIGONUCLEOTIDES ATTACHED THERETO
      AND USES THEREFOR

<130> 4149-1-1-1-1

<140> Not Yet Assigned
<141> 2000-06-26

<150> 60/031,809
<151> 1996-07-29

<150> PCT/US97/12783
<151> 1997-07-21

<150> 09/240,755
<151> 1999-01-29

<150> 09/344,667
<151> 1999-06-25

<150> 60/200,161
<151> 2000-04-26

<160> 64

<170> PatentIn Ver. 2.1

<210> 1
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 1
aaacgactct agcgcgtata   20

```
<210> 2
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 2
atggcaacta tacgcgctag                                        20


<210> 3
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 3
ccttgagatt tccctc                                            16


<210> 4
<211> 16
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 4
gagggaaatc tcaagg                                            16


<210> 5
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence
```

2

<400> 5
aacttgcgct aatggcga   18

<210> 6
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 6
aagttgcgct ttacggctaa tggcga   26

<210> 7
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 7
tctccttccc ttttc   15

<210> 8
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 8
gaaaagggaa ggaga   15

<210> 9
<211> 15
<212> DNA
<213> Artificial Sequence

```
<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 9
cttttccctt cctct                                                 15


<210> 10
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 10
aaacgactct agcgcgtata gttgccat                                   28


<210> 11
<211> 28
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 11
atggcaacta tacgcgctag agtcgttt                                   28


<210> 12
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 12
cctatcgacc atgct                                                 15
```

4

```
<210> 13
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 13
agcatggtcg ataggaaacg actctagcgc                                    30


<210> 14
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 14
gcgctagagt cgttt                                                    15


<210> 15
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 15
agcatggtcg ataggatggc aactatacgc                                    30


<210> 16
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence
```

```
<400> 16
gtcgatagga aacgactcta gcgc                                    24


<210> 17
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 17
agcatggttg ataggaaacg actctagcgc                              30


<210> 18
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 18
agcatgtttg ataggaaacg actctagcgc                              30


<210> 19
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 19
tctcaactcg ta                                                 12


<210> 20
<211> 12
<212> DNA
<213> Artificial Sequence
```

6

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 20
cgcattcagg at   12

<210> 21
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 21
tacgagttga gagagtgccc acat   24

<210> 22
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 22
tacgagttga gaatcctgaa tgcg   24

<210> 23
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 23
tacgagttga gaatcctgaa tgct   24

<210> 24

```
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 24
tacgagttga gactcctgaa tgcg                                    24


<210> 25
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 25
tacgagttga gaatcctgaa tgc                                     23


<210> 26
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 26
tacgagttga gacatcctga atgcg                                   25


<210> 27
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 27
```

8

tacgagttga gaatcctgaa tgcg   24

<210> 28
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 28
taggacttac gc   12

<210> 29
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 29
tacgagttga gaccgttaag acgaggcaat catgcaatcc tgaatgcg   48

<210> 30
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 30
tgcatgattg cctcgtctta acgg   24

<210> 31
<211> 72
<212> DNA
<213> Artificial Sequence

<220>

9

<223> Description of Artificial Sequence:random
       synthetic sequence

<400> 31
tacgagttga gaccgttaag acgaggcaat catgcatata ttggacgctt tacggacaac 60
atcctgaatg cg   72

<210> 32
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
       synthetic sequence

<400> 32
gttgtccgta aagcgtccaa tatatgcatg attgcctcgt cttaacgg   48

<210> 33
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
       synthetic sequence

<400> 33
tctcaactcg ta   12

<210> 34
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
       synthetic sequence

<400> 34
tacgagttga gaatcctgaa tgcg   24

<210> 35

10

```
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 35
cgcattcagg at                                                          12


<210> 36
<211> 141
<212> DNA
<213> anthrax

<400> 36
ggcggatgag tcagtagtta aggaggctca tagagaagta attaattcgt caacagaggg 60
attattgtta aatattgata aggatataag aaaaatatta tccagggtta tattgtagaa 120
attgaagata ctgaagggct t                                                141


<210> 37
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 37
taacaataat ccctc                                                       15


<210> 38
<211> 15
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 38
atccttatca atatt                                                       15
```

11

```
<210> 39
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 39
tgagcctcct taactactga ctcatccgcc                                    30


<210> 40
<211> 25
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 40
tgttgacgaa ttaattactt ctcta                                         25


<210> 41
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence

<400> 41
tataaccctg gataatattt ttcttat                                       27


<210> 42
<211> 29
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
     synthetic sequence
```

12

```
<400> 42
aagcccttca gtatcttcaa tttctacaa                                    29


<210> 43
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 43
tctcaactcg taaaaaaaaa aa                                           22


<210> 44
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 44
tacgagttga gaatcctgaa tgcg                                         24


<210> 45
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 45
aaaaaaaaaa cgcattcagg at                                           22


<210> 46
<211> 22
<212> DNA
<213> Artificial Sequence
```

13

```
<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 46
tctcaactcg taaaaaaaaa aa                                          22


<210> 47
<211> 22
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 47
aaaaaaaaaa cgcattcagg at                                          22


<210> 48
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 48
tacgagttga gaatcctgaa tgcg                                        24


<210> 49
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 49
ctacttagat ccgagtgccc acat                                        24
```

```
<210> 50
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 50
cgcattcagg at                                                  12


<210> 51
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 51
aaaaaaaaaa aaaaaaaaaa cgcattcagg at                            32


<210> 52
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 52
cgcattcagg atwwwwwwww wwwwwwwwww ww                            32


<210> 53
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence
```

15

```
<400> 53
atcctgaatg cg                                                    12


<210> 54
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 54
atcctgaatg cg                                                    12


<210> 55
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 55
aaaaaaaaaa aaaaaaaaaa                                            20


<210> 56
<211> 27
<212> DNA
<213> Anthrax

<400> 56
ggattattgt taattattga taaggat                                   27


<210> 57
<211> 12
<212> DNA
<213> Anthrax

<400> 57
taacaatnat cc                                                    12
```

```
<210> 58
<211> 15
<212> DNA
<213> Anthrax

<400> 58
atccttatca atatt                                              15


<210> 59
<211> 12
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 59
tctcaactcg ta                                                 12


<210> 60
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 60
tacgagttga gaatcctgaa tgcg                                    24


<210> 61
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 61
gcgtaagtcc taacgtacta acggagcaga attgccagag ttgagcat          48
```

17

```
<210> 62
<211> 72
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 62
gcgtaagtcc tacaacaggc atttcgcagg ttatatacgt actaacggag cagaattgcc 60
agagttgagc at                                                   72


<210> 63
<211> 24
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 63
tgcatgattg cctcgtctta acgg                                      24


<210> 64
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence:random
      synthetic sequence

<400> 64
gttgtccgta aagcgtccaa tatatgcatg attgcctcgt cttaacgg            48
```